Innate Behavior

- Innate Behavior defined
- Four Criteria
- Types of Innate Behavior
  - Reflexes
  - Fixed Action Patterns
  - Reflexes and FAPs: similarities and differences
- Innate and Learned Behavior in Balance
Innate Behavior

- Innate behavior: a behavior that is **not** learned.

- Four criteria:
  - Unlearned
  - Invariant
  - Universal
  - Adaptive

- How do we show that a behavior is unlearned?
Two Types of Innate Behavior

1) Reflexes (S → R)
   - Specifically, US → UR

Examples of Innate Reflexes

<table>
<thead>
<tr>
<th>US</th>
<th>UR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergens</td>
<td>Bronchial Constriction/Sneeze</td>
</tr>
<tr>
<td>Food in Mouth</td>
<td>Salivation</td>
</tr>
<tr>
<td>Sexual Stimulation</td>
<td>Physical Arousal</td>
</tr>
<tr>
<td>Temperature Extremes</td>
<td>Sweat / Shiver</td>
</tr>
<tr>
<td>Bright Light</td>
<td>Pupil Constriction</td>
</tr>
</tbody>
</table>
Two Types of Innate Behavior cont.

2) Fixed Action Pattern (FAP): Specific sequence, or pattern, of behavior elicited by a specific stimulus ("releaser," or "sign stimulus")

- Stickleback fish (Tinbergen, 1951)
- FAPs are neither intentional nor purposeful
  - Spiders and cocoon building
  - Greylag goose (Lorenz & Tinbergen, 1938)
- "Motivational conditions" sometimes needed
Reflexes and FAPs: Similarities and Differences

- **Similarities**
  - Four criteria
  - Specific stimulus

- **Differences**
  - Reflex: 1 action
    - FAP: More than 1 action / behavior
  - Reflex: part of organism
    - FAP: whole organism

- FAPs in humans?
Balancing Innate and Learned Behavior in Nature

Do all organisms need the ability to learn in order to survive?

- Static vs. dynamic environments
- The advantage of learning
- The cost of learning
Effects of Repeated Stimulation

- Habituation
  - Related Phenomena

- Sensitization

- When habituation? When sensitization?
  - Dual Process Theory
Habituation

- Habituation: a decrease in the strength of a behavior / response
  - White noise; Intermittent weak stimulus
- Adaptive:
  - Avoid sensory overload
  - Keeps us open to new stimuli
  - Stimulus-specific
Phenomena Related to Habituation

- Spontaneous Recovery
  - Recovery of a habituated response, after a break
  - Need a reasonable amount of time

- Retention of Habituation (Long-term Habituation)
  - Complete spontaneous recovery may not occur

- Dishabituation
  - Recovery of habituated response after a new stimulus is presented
Habituation-related Phenomena cont.

What is common, and what is different (in terms of procedure and what is measured) between:

- Spontaneous recovery and Dishabituation?
  - Common: measure amount of response to stimulus
  - Difference: Spontaneous recovery has span of time; Dishabituation presents a single novel stimulus

- Procedures used to demonstrate stimulus-specificity of Habituation and Dishabituation?
Sensitization

- Sensitization: an increase in the strength of a behavior / response
  - Annoying moviegoer; Gunfire
  - NOT stimulus-specific! The presentation of one stimulus may increase the response to another stimulus (dishabituation occurs)
When Habituation? When Sensitization?

Dual Process Theory

- States that each stimulus presentation results in two opposite processes, also called ‘Habituation’ and ‘Sensitization.’ Any change in behavior is a net result of these two processes.

- Both Hab. and Sens. together (collectively) are a direct function of the frequency of stimulation.
  - Higher intensity $\rightarrow$ Sensitization
  - Lower intensity $\rightarrow$ Habituation
  - Moderate intensity $\rightarrow$ Sensitization, then Habituation
When Habituation, when Sensitization?
cont.

Dual Process Theory cont.

- Habituation is a **continuous** process: it continues to increase with stimulus presentation; starts to decay only after stimulus ceases.

- Sensitization is a **temporary** process: it begins to decay while the stimulus is still being presented.
When Habituation, when Sensitization?
cont.

Stimulus Frequency and Intensity

Frequency

- Both are direct functions of stimulus frequency

Intensity

- Sensitization: direct function of stimulus intensity
- Habituation: inverse function of stimulus intensity